

In claims 10, line 2, delete "1" and insert - -2- -.

In claim 15, line 3, delete "1" and insert - -2- -.

REMARKS

Claims 2-21 are under consideration in this application. Claims 10-16 stand rejected under 35 U.S.C. 112, second paragraph. Claims 2-21 stand rejected under 35 U.S.C. 103(a). Claims 10 and 15 are amended to correct the dependency from canceled claim 1 to independent claim 2. Claim 2 is amended to more specifically recite the invention. Support for the amendment of claim 2 is found in the specification at page 9, lines 8 and 13-16.

Reconsideration of this application is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 112, second paragraph

The Examiner rejects claims 10-16 under 35 U.S.C. 112, second paragraph, as being indefinite for lack of antecedent basis. The Examiner points out that claims 10 and 15 each depend from canceled claim 1, and that claims 11-14 depend from claim 10, while claim 16 depends from claim 15. Applicant has amended claims 10 and 15 to depend from claim 2. Thus, claims 10 and 15 now have antecedent basis, as do claims 11-14 and 16.

In light of the foregoing amendments, applicant respectfully requests reconsideration and withdrawal of the rejection of claims 10-16 under 35 U.S.C. 112, second paragraph.

REJECTION UNDER 35 U.S.C. § 103(a)

The Examiner rejects claims 2-21 under 35 U.S.C. 103(a) over US Patent No. 5,183,659 Timoney, et al (“Timoney”) in view of EP0786515 A1 Hartford, et al (“Hartford”) and U.S. Patent No. 5,597,807 Estrada, et al (“Estrada”). Applicant respectfully traverses the rejection.

Claim 2 as amended, now recites a composition comprising a live non-encapsulated attenuated *Streptococcus equi* in combination with an immunostimulant, the immunostimulant having the property of stimulating mucosal immunity and the composition having the property of inducing protective immunity against *Streptococcus equi* infection following *Streptococcus equi* challenge as compared to non-vaccinated horses. Claims 3-21 incorporate all of the limitations of claim 2.

The Examiner relies on Timoney in combination with Hartford and Estrada in support of an obviousness rejection of claims 2-21. Claim 2 is the independent claim. Claims 3-21 each depend from claim 2. The Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the art. Both the suggestion of making the present invention and the expectation of success must be founded in the prior art, not in applicant’s disclosure. In re Dow Chemical Co., 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988.) Applicant respectfully submits that neither of these criterion have been met.

An analysis of a combination of Timoney in view of Hartford and Estrada demonstrates that there is neither a suggestion nor an expectation of success provided for making the efficacious horse vaccines of the invention comprising a live attenuated

Streptococcus equi and an immunostimulant, the immunostimulant having the property of stimulating mucosal immunity and the composition having the property of inducing protective immunity from *Streptococcus equi* infection in horses following *Streptococcus equi* challenge.

With regard to Timoney, the Examiner herself confirms that the reference does not teach the combination of a live non-encapsulated attenuated *Streptococcus equi* in combination with an immunostimulant. The Examiner also confirms that Hartford does not teach the stimulation of mucosal immunity.

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Moreover, Hartford teaches a new mutated *Streptococcus equi* strain TW 928 which comprises a large deletion (about 1 kb) in its genome. Hartford nowhere exemplifies the use of adjuvant (*i.e.* an immunostimulant) in combination with its mutated strain. Hartford not only is deficient in its lack of teaching of the stimulation of mucosal immunity, Hartford also does not teach or suggest a composition comprising the *Streptococcus equi* strain in combination with an immunostimulant that has the property of inducing protective immunity in horses. Thus, not only is there no exemplification of a combination with an immunostimulant, but, with regard to the challenge and testing of an efficacious vaccine, Hartford solely discloses administration of its *Streptococcus equi* strain to BALB/c mice. The only tests in horses were carried out to determine the safety of the attenuated virus. No vaccination and challenge with live virus was ever carried out in horses. See Example V at page 12. Hartford provides neither a teaching nor a suggestion of its vaccine's possession of the property of inducing protective immunity in horses as claimed.

A person of ordinary skill in the art would not expect to enhance the protective immunity of a live vaccine in an animal if that vaccine had not been demonstrated to be protective for that animal. Indeed, no one reading the mouse study of Hartford would have a reasonable expectation that administration of the Hartford vaccines would necessarily provide protective immunity in horses following *Streptococcus equi* challenge as compared to non-vaccinated horses.

The Hartford study cannot demonstrate an efficacious horse vaccine because no such demonstration in horses was ever performed. Thus, neither Timoney nor Hartford, either alone or in combination, teach or suggest an efficacious *Streptococcus equi* horse vaccine (either alone, or in combination with other viral components) formed from live attenuated viruses in conjunction with an immunostimulant such that immunity is induced in vaccinated horses following *Streptococcus equi* challenge as compared to non-vaccinated horses.

The Examiner relies on Estrada to make up for the deficiencies of Timoney and Hartford. The Examiner points to Estrada at column 5, lines 39-45 stating that “Estrada teaches the discovery that Q. Saponin composition can promote mucosal immunity, *i.e.* the production of IgG and IgA antibodies and enhances both humoral and secretory immune responses in vertebrates when administered with a selected antigen.” (See page 4 of Office Action.) Applicants respectfully point out that Estrada does not actually state that Q. Saponin promotes mucosal immunity *per se*. Column 5, lines 39-45 of the patent state that such compositions can promote production of the aforementioned immunoglobulin antibodies, enhance humoral and secretory immune responses, enhance non-specific immunity and “cause

increased absorption through mucosal membranes.” This is not the same as stating that mucosal immunity is promoted.

While Estrada indicates that Q Saponin compositions can promote production of IgA and secretory immune responses, a combination of Estrada with Timoney and Hartford in no way renders the claimed invention obvious. Applicant submits that the Examiner has relied on hindsight to arrive at the determination of obviousness. Estrada and Hartford in no way make up for the deficiencies of Timoney.

Estrada exemplifies that Q. Saponin can promote production of IgG and IgA, enhance immune responses and increase absorption through mucosal membranes in BALB/c mice. Nowhere do Timoney, Hartford or Estrada, either alone or in combination, suggest that the attenuated viruses of Timoney or Hartford used in combination with an immunostimulant for mucosal immunization would, upon administration to and challenge in horses, provide the recited protective immunity. Estrada nowhere provides a teaching or suggestion to overcome the deficiencies of Timoney and Hartford. A mere indication that the Q. Saponin of Estrada increases immune responses, promotes generation of IgG and IgA or increases absorption through mucosal membranes in mice, neither suggests nor provides a reasonable expectation of success in obtaining the efficacious vaccine composition which induces the demonstrated protective immunity in horses as claimed.

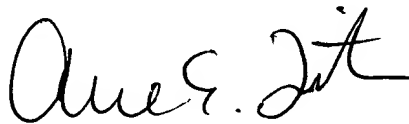
In light of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 2 under 35 U.S.C. 103(a). In addition, since claims 3-21

each contain all of the limitations, features and attributes of claim 2, these claims should also be found non-obvious over the cited art. In re Fine, 5 U.S.P.Q. 2d 1596, 1600 (Fed. Cir.)

CONCLUSION

In light of the foregoing, reconsideration and withdrawal of all of the objections and rejections are respectfully requested. Applicant submits that all of claims 2-21 are in condition for allowance. Prompt and favorable allowance of the claims is requested. If for any reason the Examiner concludes that any of the claims as amended is not properly allowable, the Examiner is respectfully requested to contact the undersigned by telephone at 212-527-7679.

Respectfully submitted,



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Amendment
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